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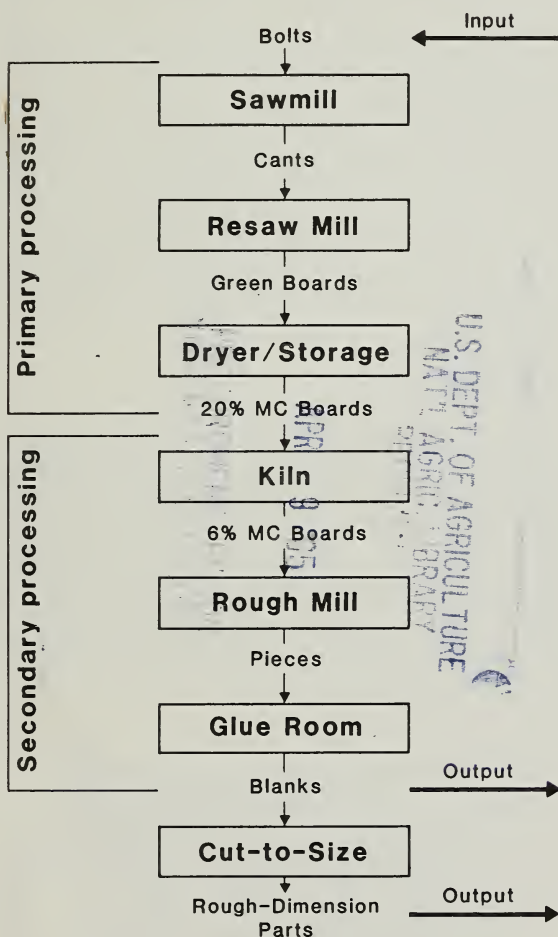
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System 6: A New Technology



United States
Department of
Agriculture

PREPARED BY
Forest Service

Northeastern Forest
Experiment Station
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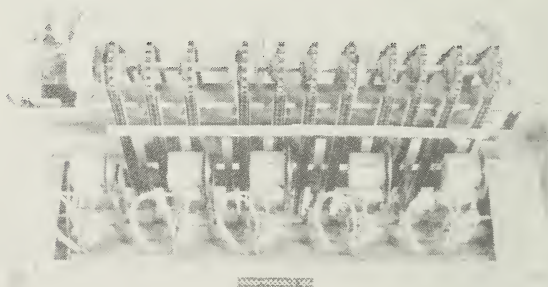
System 6 is a new technology which uses low grade, small diameter timber. Through a six-step process, trees which would ordinarily be chipped, are instead sawed to bolts. These bolts are made to cants, which are resawed to boards. Boards are air dried, kiln dried, and cut up into defect-free pieces. The pieces are then edge glued to make standard-size panels. The result is that low grade lumber is converted into defect-free panels for use by the furniture and kitchen cabinet industries.

The System 6 Rough Mill—A Different Concept

The System 6 rough mill differs from a conventional mill in four basic concepts: The System 6 rough mill is highly automated to save time and production costs; there is total processing of every board which translates into savings for not only mill owners, but ultimately the consumer in wood products pricings and tree and forest conservations; the operator makes only a limited amount of decisions; and the end product is a new solid wood product called a standard-size blank.

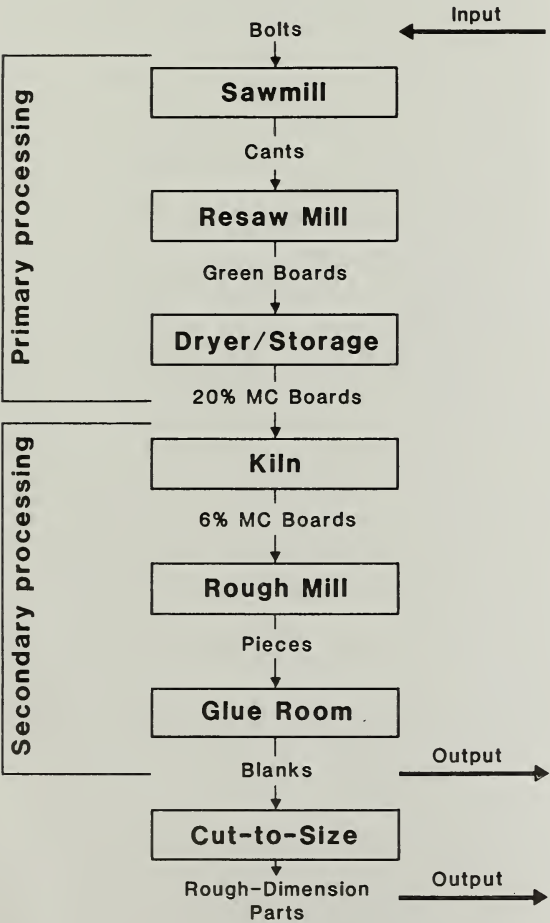
The System's Center

The gang crosscut saw is the central component of the System 6 rough mill. In System 6 all boards having at least one minimum size cutting are used to make blanks; these boards are short and narrow. Since the quality of the boards is so poor, a rapid and efficient automated breakdown is necessary to produce blanks relatively free of objectionable defects. This process is known as gang crosscutting. The gang crosscut saw has



four or five blades depending on the length of board to be cut. Final cut lengths are deter-

mined by the spacings between the saws, and whether saws are set up to miss or down to hit. Gang crosscut lengths (GCL's) are set at the beginning of the run, and are not changed during the run. When the two outside saws are down, and the other saws are up, one large piece is made from each board. When a third saw is lowered, each board is cut into two pieces. When all of the saws are lowered, each 6-foot board is cut into three pieces, and each 8 foot board is cut into four pieces.



A Sample Run

The rough mill begins operation at the point after boards have been air dried and then kiln dried. The boards then undergo a seven-step conversion process which transforms them into defect-free pieces of solid wood known as standard-size blanks.

- 1) Rough Plane
- 2) Gang Crosscut
- 3) Piece Sort
- 4) Gang Rip
- 5) Defect and Cut-To-Length
- 6) Sort by Length
- 7) Package by Blank Lengths

Let's look at this process a little closer. In each run blanks of only one quality, width, and thickness are made; these must be specified to set up the rough mill for a run. Packages of boards are brought from the dry kiln to the rough mill. These boards are fed into the rough planer and are hit and missed planed on both sides. One board at a time, they go to the crosscut saw. Here boards are examined to determine the best length to cut for. Boards are either end trimmed, cut into 2 pieces, or, where appropriate, cut into 3 pieces. Once the pieces leave the gang crosscut saw they are inspected; those having a minimum clear area or more are sent to the gang rip saw. The gang rip saw operator inspects each piece to determine the best edge, and the width of a clear piece that can be ripped from that edge. Having been gang ripped, the pieces go to the defecting saw where end defects are trimmed to the longest possible standard length. Pieces with remaining edge defects are sent to the salvage rip saw. After the defecting step, the pieces are sorted by length and are ready for edge glueing.

That essentially is the rough mill in operation. The USDA Northeastern Forest Experiment Station has produced a series of literature about the System 6 technology including:

Reynolds, Hugh. W.; System 6: Rough Mill Operating Manual. Res. Pap. NE-542. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station; 1984. 27 p.

